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AREA DENIAL SYSTEM**FIELD OF THE INVENTION**

The present invention relates to defense means, particularly to the field of non-lethal area denial devices, and to non-lethal devices for injuring, disabling, RFID tagging or otherwise marking enemy personnel, vehicles and robots. The present invention relates to devices such as landmines and other area denial devices that, after deployment, are armed or arm themselves through the action of an integrated component or function, and later are disarmed or disarm themselves through a process.

SUMMARY OF THE INVENTION

Explosive anti-personnel landmines cause thousands of deaths and severe, life limiting injuries amongst the enemy and civilians every year. Every year anti-personnel landmines kill or maim over 20,000 civilians.

Because of widespread international concern about the high number of civilian injuries and deaths from these mines, there is general agreement among many Governments that it is necessary to restrict and eliminate these weapons. This has resulted in an international treaty known as the Ottawa Convention to ban explosive Anti-Personnel Landmines.

The United States is not a signatory to this treaty. Military forces see the continuing need to deny enemy access to areas, or to delay access until friendly troops can occupy and mount defenses. The United States maintains that United States anti-personnel mines are not the cause of civilian casualties since the anti-personnel mines in United States mine systems self-destruct during or shortly after combat.

The need for anti-personnel landmines will never go away as it is highly desirable to selectively deny an enemy access to an area. It is also highly desirable to deny access to approaches around camps and fortifications, both on a long and short-term basis. With an explosive anti-personnel landmine, the possibility of civilian injury and death is very high. The possibility of accidental injury or death to friendly forces is also high during deployment and recovery of the landmine.

The most common use of mines in conflicts is to protect economic and social targets such as bridges, dams, oil, gas and water pipelines, airports and railroad stations from attack or sabotage by the enemy. The present invention meets this need, and as it is non-lethal and non-maiming in nature is suitable for long term and wide deployment as an area denial or perimeter defense device.

The lance penetrator of the current invention is anti-personnel in nature, but does not produce a large explosion to incapacitate or kill the enemy personnel. The lance penetrator effects a deterrent action by driving a lance into the enemy personnel where, with certain preferred embodiments herein described, achieves by a variety of methods the incapacitation and deterrent of the enemy personnel to continue the battle. The present invention is both incapacitating and nonlethal in its nature. The enemy personnel is placed in immediate need of specialized medical attention, thereby encouraging the enemy personnel to leave the battlefield or surrender, all without the endangerment of life or property.

The present invention provides a landmine replacement that is non-lethal yet poses a serious threat of pain and injury providing a strong deterrent to enemy personnel entering the area. The present invention causes a painful and temporally

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disabling injury, and provides options for tagging, identifying and tracking enemy personnel. The present invention provides for the use of electrical, chemical, mechanical and biological means to further deter the enemy personnel as desired.

The present invention provides a lance penetrator that inflicts a non-lethal injury to enemy personnel by means of a lance that will pierce the body at the point of contact. The lance penetrator does not accomplish its deterrent action by exploding, but by driving a lance into the enemy, preferably the enemy's foot. The lance will cause severe pain at the point of entry, but will not penetrate far enough to be life threatening. Further, the lance is preferably equipped with an identification device, such as a Radio Frequency Identification Device known generally as an RFID chip, that is inserted into the body of the enemy personnel and remains there even if the enemy personnel pulls the lance out. Other identification devices include those comprised of metal, magnetic material, radioactive material, biological agents, chemical or chemicals, drugs, paper, plastic, ceramic, glass, wood, organic materials or combinations thereof.

By equipping the lance of the present invention with an embeddable RFID chip, the lance may be easily cataloged and identified if removal from the field becomes necessary. The RFID chip that is imbedded in an enemy personnel may be matched with the RFID of the delivering lance providing an exact location of the enemy personnel at the time of the lance activation. An RFID chip may be momentarily powered by the lance initiation recording the time of initiation from a provided but remote radio frequency (RF) transmitter or from commercial or other sources. A single RFID in the lance may be used for all purposes. The lance penetrator and lance tube are equipped with identification markings for record keeping, identification and control.

The lance is shaped and surfaced to readily penetrate and enter the body. It resists attempts to remove it by simply pulling or tugging. The lance is selectively ribbed or roughened, barbed, wired, or may have a shaped surface that requires expansion of the wound to facilitate removal. The lance may be further equipped to be separable in tension allowing a portion of the lance to separate during a removal attempt leaving the remaining portion of the lance imbedded in the insurgent.

The lance shape is selectable, and shapes such as a drywall screw that are difficult to remove are preferred. Attempts to remove the lance are complicated such as by making the shape a left hand screw. In this manner an uninformed person attempting to remove the screw shaped lance using the right hand turning action, will simply drive the lance deeper into the foot of the enemy personnel. Alternating screw directions may exist on the same lance providing maximum damage and discomfort if the lance moves. Lances that are thus shaped will discourage casual attempts at removal. Knowledge that specialized tools for removal exist will encourage the enemy personnel to quickly surrender and seek medical attention.

The lance penetrator is low noise in its operation as the lance is directly impacting and penetrating the foot or sole of the boot, and the expanding gas noise is muffled by the enemy being directly on top of the lance.

The area denial device including the tube and lance penetrator is preferred to be constructed of a wide range of materials including non-magnetic materials such as polycarbonates. An area denial device made entirely of a polycarbonate is not detectable by magnetic means.

While the method of this invention is herein shown and described with reference to specific embodiments, it will be